

Name Key

Date _____

CHAPTER
9

Chapter Test A

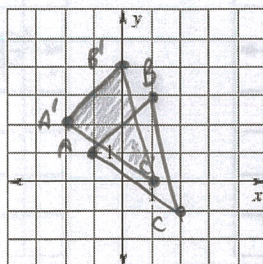
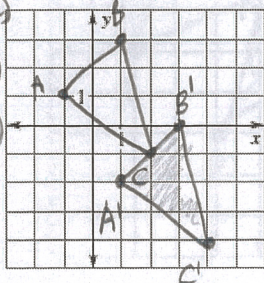
For use after Chapter 9

The vertices of $\triangle ABC$ are $A(-1, 1)$, $B(1, 3)$ and $C(2, -1)$.
Graph the image of the triangle using prime notation.

1. $(x, y) \rightarrow (x + 2, y - 3)$

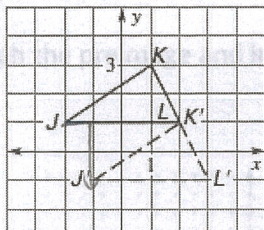
2. $(x, y) \rightarrow (x - 1, y + 1)$

$$\begin{aligned} A(-1, 1) & A'(1, -2) \\ B(1, 3) & B'(3, 0) \\ C(2, -1) & C'(4, -4) \end{aligned}$$

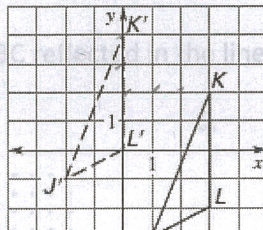


$\triangle J'K'L'$ is the image of $\triangle JKL$ after a translation. Write a rule for the translation.

3.



4.



Answers

1. See left.

2. See left.

$$\begin{aligned} A'(-2, 2) & 3. (x, y) \rightarrow (x+1, y-2) \\ B'(0, 4) & 4. (x, y) \rightarrow (x-3, y+2) \\ C'(1, 0) \end{aligned}$$

5.

6.

7.

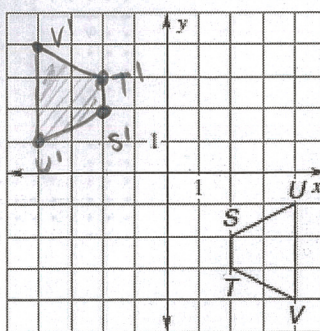
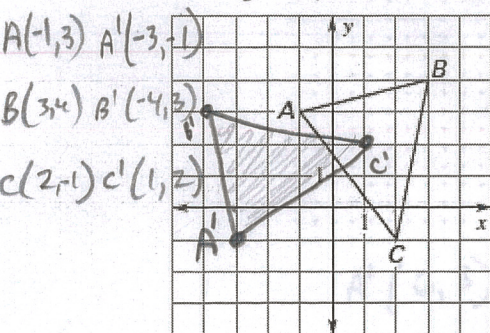
8.

Rotate each figure the given number of degrees counterclockwise about the origin. List the coordinates of the vertices of the image.

11. $90^\circ (a, b) \rightarrow (-b, a)$

12. $180^\circ (a, b) \rightarrow (-a, -b)$

$$\begin{aligned} A(-1, 3) & A'(-3, 1) \\ B(3, 4) & B'(-4, 3) \\ C(2, -1) & C'(1, -2) \end{aligned}$$



Answers

$$\begin{aligned} 11. & A'(-3, -1) \quad B'(4, 3) \\ & C'(1, 2) \end{aligned}$$

$$\begin{aligned} 12. & S'(-2, 2) \quad T'(-2, 3) \\ & U'(-4, 1) \quad V'(-4, 4) \end{aligned}$$

$$\begin{aligned} 13. & A''(-2, 6) \quad B''(1, 4) \\ & C''(-2, 3) \end{aligned}$$

$$\begin{aligned} 14. & A''(-2, -5) \quad B''(1, -3) \\ & C''(-2, -2) \end{aligned}$$

15.

16.

17.

In Exercises 13 and 14, the vertices of $\triangle ABC$ are $A(-4, 4)$, $B(-1, 2)$, and $C(-4, 1)$. Find the vertices of $\triangle A''B''C''$ after a composition of the transformations in the order they are listed.

$$\begin{aligned} 13. & \text{Translation: } (x, y) \rightarrow (x + 3, y - 2) \quad A'(-1, 2) \quad C'(-1, -1) \\ & \text{Translation: } (x, y) \rightarrow (x - 1, y + 4) \quad B'(2, 0) \end{aligned}$$

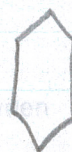
$$\begin{aligned} 14. & \text{Translation: } (x, y) \rightarrow (x + 2, y + 1) \\ & \text{Reflection: in the x-axis} \end{aligned}$$

$$\begin{aligned} A'(-2, 5) \\ B'(1, 3) \\ C'(-2, 2) \end{aligned}$$

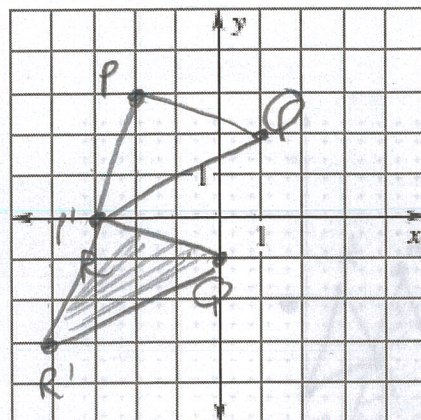
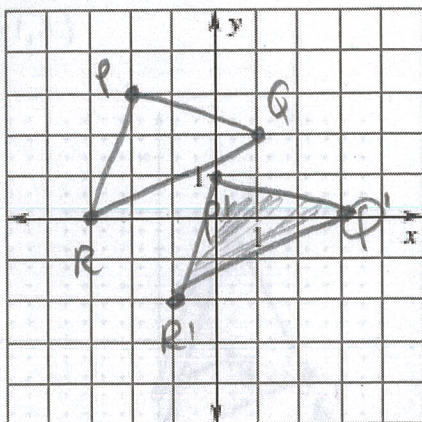
#15 (1)

#16 (4) ☆

#17 (2)



The vertices of $\triangle PQR$ are $P(-2, 3)$, $Q(1, 2)$, and $R(-3, 0)$.
Translate $\triangle PQR$ using the given vector. Graph $\triangle PQR$ and its image.

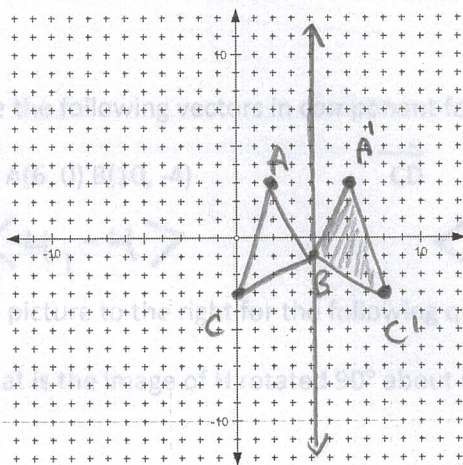
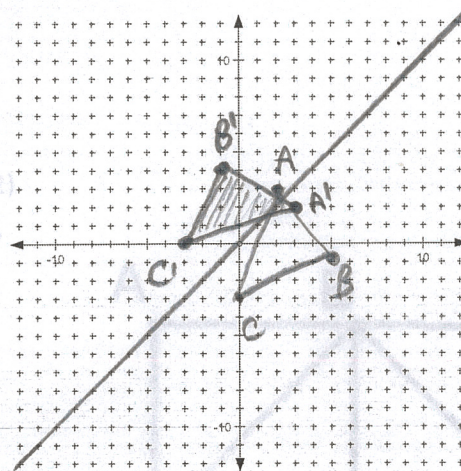
3. $\langle 2, -2 \rangle$ 4. $\langle -1, -3 \rangle$ 

5. Graph the preimage and image of $\triangle ABC$ reflected in the line $x = 4$. $A(2, 3)$ $B(4, -1)$ $C(0, -3)$

6. Graph the preimage and image of $\triangle ABC$ reflected in the line $y = x$. $A(2, 3)$ $B(4, -1)$ $C(0, -3)$

5.

6.

 $A'(6, 3)$ $B'(4, -1)$ $C'(8, -3)$  $A'(3, 2)$ $B'(-1, 4)$ $C'(-3, 0)$

* 15, 16, +17 were added + their answers are above.

7. Graph the preimage and image of $\triangle ABC$ dilated about the origin with a ratio of 2:

A (2, 3) B(4, -1) C(0, -3)

8. Graph the preimage and image of $\triangle ABC$ dilated about the point(-1, 2) with a ratio of 2.

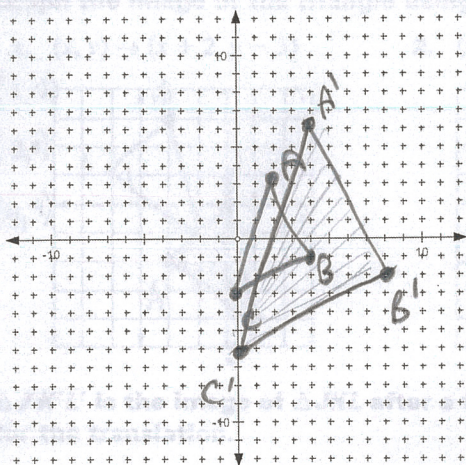
A (2, 3) B(4, -1) C(0, -3)

(-1, 2)

7.

8.

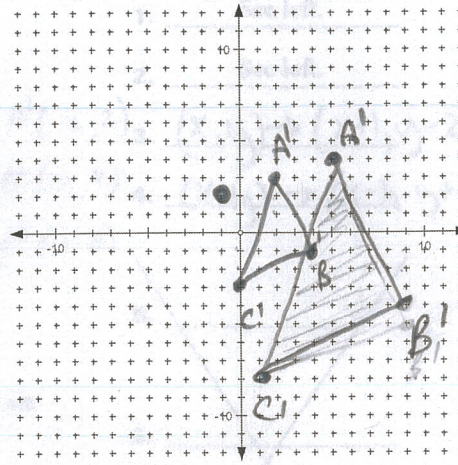
$A'(4, 6)$
 $B'(8, -2)$
 $C'(0, -6)$



$A' \begin{matrix} 3 & 1 \\ 6 & 2 \end{matrix}$
 $(5, 4)$

$B' \begin{matrix} 5 & 3 \\ 16 & 6 \end{matrix}$
 $(9, -4)$

$C' \begin{matrix} 1 & 5 \\ 2 & 10 \end{matrix}$
 $(1, -8)$



9. Write the following vectors in component form.

\overrightarrow{AB}

A(6, 0) B(10, -4)

\overrightarrow{CD}

C(8, -6) D(5, 2)

$\langle 4, -4 \rangle$

$\langle -3, +8 \rangle$

Use the picture to the right for the following questions.

10. What is the image of H rotated 90° about G? D

11. What is the image of H rotated 180° about G? B

12. What is the image of H rotated 270° clockwise about G? D

13. What is the image of H rotated 90° about I? F

